IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Verleysen	§	Atty. Dkt. No.: F-902
Serial No.: 10/589,306	§	Group Art Unit: 1796
Confirmation No.: 6502	§	Cust. No.: 25264
Filed: April 9, 2007	§	Examiner: Lu
For: Method and Apparatus for Controlling the Recovery of Solid Polyolefin From a Continuous Reaction Zone	§	

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Honorable Commissioner:

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37 CFR 1.10
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APPEAL BRIEF

Appellants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 1796 dated October 17, 2008, finally rejecting claims 13-16.

Real Party in Interest

The present application has been assigned to TOTAL Petrochemicals Research Feluy, Zone Industrielle C, Seneffe, Belgium B7181.

Related Appeals and Interferences

Appellants assert that no other appeals, interferences or judicial proceedings are known to the Appellants, the Appellants' legal representative or Assignee that will

directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-6 were originally filed in the application. Claims 1-6 were cancelled and claims 7-12 were added in a Preliminary Amendment. Claims 7-8 were cancelled and claim 13 was added in Response to an Office Action dated November 1, 2007. Claims 9-12 were cancelled and claims 14-16 were added in Response to an Office Action dated April 1, 2008. Accordingly, claims 13-16 are pending in the application and stand rejected under 35 U.S.C. §103(a). The rejection of the pending claims is appealed. The pending claims are shown in the attached Appendix A.

Status of Amendments

No amendments have been made to the pending claims in response to the Final Office Action.

Summary of Claimed Subject Matter

Independent claim 13 recites a method for operating an olefin polymerization loop reactor system comprising introducing an olefin, a polymerization catalyst, and a diluent carrier liquid into a loop reactor, wherein the loop reactor comprises a circulating pump, a settling leg and a 180° rotating product take-off valve operably connected to the settling leg for the removal of polymer therefrom, contacting the olefin with the polymerization catalyst in the presence of the diluent carrier liquid to form a slurry of polymer particles within the loop reactor and withdrawing polymer particles from the settling leg through the 180° rotating take-off valve, wherein the polymer particles are withdrawn from the settling leg at a predetermined time interval, the predetermined time interval adapted to provide for removal of substantially all polymer particles from the settling leg with substantially no removal of olefin and diluent from the loop reactor and maintaining the predetermined time interval by automatically controlling and adjusting air flow passing to the 180° rotating take-off valve for operation thereof, wherein the

predetermined time interval is automatically controlled by a pneumatically driven double-acting actuator. *See,* specification, at least Abstract.

Independent claim 14 recites a polymerization process comprising polymerizing olefin monomer in a liquid diluent to produce a liquid slurry containing polymer particles within a loop reactor, wherein the loop reactor is operably connected to a first end of a settling leg, allowing the polymer particles to settle in the settling leg, periodically opening a 180 degree rotating product take-off valve disposed at a second end of the settling leg to withdraw the polymer particles from the settling leg, wherein the product take-off valve is operated by a pneumatically driven double-acting actuator and the pneumatically driven double-acting actuator is regulated by a system comprising pneumatic control valves. *See,* specification, at least Abstract.

Grounds of Rejection to be Reviewed on Appeal

The rejection of claims 13-16 under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 5,183,866 (*Hottovy*) in view of U.S. Pat. No. 5,455,314 (*Burns*) and U.S. Pat. No. 5,462,998 (*Tanifuji*).

Arguments

THE EXAMINER ERRED IN REJECTING CLAIMS 13-16 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER *HOTTOVY* IN VIEW OF *BURNS* AND *TANIFUJI*.

Hottovy teaches a polymerization process wherein polymer solids accumulate in a settling leg provided with a product take off (PTO) valve. *See*, column 2, lines 45-50. The PTO valve has a port opening into an elongated confined zone having a flash line heater and connected to a flash tank. *See, Id. Hottovy* discovered that by restricting flow in the elongated confined zone (*i.e.*, flow time of the charge of slurry in the elongated confined zone is equal to at least about 25% of the time between the closing of the PTO valve and the next opening of the PTO valve), smaller diameter flash line heaters can be used. *See*, column 2, line to column 3, line 7. However, *Hottovy* does not teach, show or suggest the critical features of the pending claims. Specifically, *Hottovy* does not teach, show or suggest a 180° rotating product take-off valve operably connected to the settling

leg for the removal of polymer therefrom. The Examiner states that "Hottovy does not expressly disclose the type of PTO valve". *See*, Office Action dated April 1, 2008 at page 3, second full paragraph. Appellants identify teachings at column 3, line 43 to column 4, line 8, which very specifically describe features of the PTO valve.

The Examiner further states that "[t]aking the solid polymer product from the polymerization reactor through a rotating valve to minimize the interruption of the polymerization process is conventional and such is taught in Burns...and Tanifuji". *See*, Office Action dated at paragraph 3.

Burns teaches continuous control of withdrawal of reaction slurry by manipulating a v-notch ball valve. *See*, column 2, lines 42-52. However, *Burns* does not teach, show or suggest a 180° rotating product take-off valve. It has been observed that the use of 180° valves provide precise control and adjustment of the opening time that cannot be achieved using 90° valves. See, published application at least paragraphs 22 and 26

Tanifuji teaches batch vinyl chloride polymerization. *See*, Abstract. In contrast, *Hottovy* and *Burns* teach slurry loop polymerization of olefin monomers. Accordingly, Appellants respectfully submit that the teachings lack a firm basis to predict the effect of the proposed interchange. *See*, *Ex parte Koo*, 150 U.S.P.Q. 131 (Bd. Pat. App. 1965) at 132. Accordingly, Appellants submit that it would not have been obvious to one skilled in the art to have combined the teachings of *Tanifuji* with those of *Hottovy* and *Burns*.

However, even if the teachings of the references were combined, Appellants respectfully submit that such combined teachings still fail to teach critical aspects of the pending claims. In addition to lacking a 180° rotating product take-off valve, *Hottovy* does not teach, show or suggest withdrawing polymer particles from the settling leg through the 180° rotating take-off valve, wherein the polymer particles are withdrawn from the settling leg at a predetermined time interval, the predetermined time interval adapted to provide for removal of substantially all polymer particles from the settling leg with substantially no removal of olefin and diluent from the loop reactor. Rather, *Hottovy* teaches periodic removal and restriction of flow in the elongated confined zone so that flow time of the charge of slurry in the elongated confined zone is equal to at least about 25% of the time between the closing of the PTO valve and the next opening of the

PTO valve. *Hottovy* does not address the issue of olefin/diluents escape through the valve and accordingly, does not teach, show or suggest predetermined time intervals for removal.

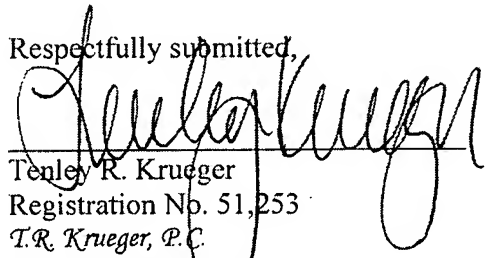
Further, *Hottovy* does not teach, show or suggest maintaining the predetermined time interval by automatically controlling and adjusting air flow passing to the 180° rotating take-off valve for operation thereof, wherein the predetermined time interval is automatically controlled by a pneumatically driven double-acting actuator. These missing features are not supplied, nor does the Examiner assert that they are supplied, by the secondary references.

For the reasons set forth above, Appellants respectfully request reversal of the rejection.

Conclusion

In conclusion, the references of record, either alone or in combination, do not teach, show or suggest the features of the pending claims. Thus, Appellants respectfully request reversal of the rejections of claims 13-16.

Respectfully submitted,



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Appendix A

Pending Claims

13. A method for operating an olefin polymerization loop reactor system comprising:

introducing an olefin, a polymerization catalyst, and a diluent carrier liquid into a loop reactor, wherein the loop reactor comprises a circulating pump, a settling leg and a 180° rotating product take-off valve operably connected to the settling leg for the removal of polymer therefrom;

contacting the olefin with the polymerization catalyst in the presence of the diluent carrier liquid to form a slurry of polymer particles within the loop reactor; and

withdrawing polymer particles from the settling leg through the 180° rotating take-off valve, wherein the polymer particles are withdrawn from the settling leg at a predetermined time interval, the predetermined time interval adapted to provide for removal of substantially all polymer particles from the settling leg with substantially no removal of olefin and diluent from the loop reactor; and

maintaining the predetermined time interval by automatically controlling and adjusting air flow passing to the 180° rotating take-off valve for operation thereof, wherein the predetermined time interval is automatically controlled by a pneumatically driven double-acting actuator.

14. A polymerization process comprising:

polymerizing olefin monomer in a liquid diluent to produce a liquid slurry containing polymer particles within a loop reactor, wherein the loop reactor is operably connected to a first end of a settling leg ;

allowing the polymer particles to settle in the settling leg;

periodically opening a 180 degree rotating product take-off valve disposed at a second end of the settling leg to withdraw the polymer particles from the settling leg, wherein the product take-off valve is operated by a pneumatically driven double-acting actuator and the pneumatically driven double-acting actuator is regulated by a system comprising pneumatic control valves.

15. The process of claim 14, wherein the control valves are automatic control valves.

16. The process of claim 14, wherein the control valves are V-ball valves.

Appendix B

Evidence

1. *Ex parte Koo*, 150 U.S.P.Q. 131 (Bd. Pat. App. 1965).

Appendix C

Related Proceedings

Not Applicable